In the Claims:

Please cancel claims 8-10, without prejudice.

Please amend claim 2 as follows:

1. (Original) An apparatus for recording and regenerating data, said apparatus comprising:

a recording part iteratively recording the data on a recording medium predetermined times;

a sample value storing part storing a sample value obtained by sampling a regenerative signal from the data iteratively recorded on the recording medium;

a pass metric calculating part calculating a branch metric and a pass metric based on the sample value stored in said sample value storing part; and

a likelihood converting part converting a calculation result obtained by said pass metric calculating part into likelihood of the calculation result,

wherein said pass metric calculating part calculates the pass metric based on the likelihood converted by said likelihood converting part and decodes the data recorded on the recording medium.

2. (Currently amended) The apparatus as claimed in claim ~~2~~1, wherein said likelihood converting part converts the calculation result based on a pass metric difference between pass metric values "0" and "1".

3. (Original) The apparatus as claimed in claim 2, wherein said likelihood converting part calculates the pass metric difference based on an influence degree that the likelihood influences the pass metric, and then converts the pass metric difference into the likelihood.

4. (Original) The apparatus as claimed in claim 1, wherein said recording part iteratively records the data on the recording medium at a data unit dividing the data by a predetermined data length for predetermined times, and said sample value storing part stores the sample value being of the predetermined data length.

5. (Original) An apparatus for recording and regenerating data, said apparatus comprising:

a recording part iteratively recording the data at a data unit dividing the data by a predetermined data length by sequentially changing a predetermined numbers of recording areas on a recording medium;

a plurality of storage sample value storing parts corresponding to the predetermined numbers of recording areas, respectively, each storage sample value storing part storing a sample value obtained by sampling a regenerative signal from the data recorded on each recording area at the data unit;

a plurality of pass metric calculating parts corresponding to said plurality of storage sample value storing parts, respectively, each pass metric calculating part calculating a branch metric and a pass metric based on each sample value;

a plurality of likelihood converting parts corresponding to said plurality of pass metric calculating parts, respectively, each likelihood converting part converting a calculation result obtained by each said pass metric calculating part into likelihood of the calculation result,

wherein each said pass metric calculating part calculates the pass metric based on the likelihood converted by each said likelihood converting part and decodes the data recorded on the recording medium.

6. (Original) The apparatus as claimed in claim 5, wherein said recording part iteratively records the data on the predetermined number of tracks sequentially being adjacent on the recording medium while said recording part delays to record for one predetermined data unit every time said recording part changes one track to another track in sequence.

7. (Original) The apparatus as claimed in claim 5, wherein said predetermined number of pass metric calculating parts calculate the branch metrics and the pass metrics while each of said predetermined number of pass metric calculating part delays to calculate for one predetermined data unit.

8-10. Canceled.

11. (Original) An apparatus for recording and regenerating data, said apparatus comprising:

a recording part converting a first data to be regenerated into a second data in accordance with a predetermined operation and recording the second data;

a first decoding part calculating a branch metric and a pass metric as a first calculation result for a sample data by sampling a regenerative signal from the second data recorded on the recording medium and decoding the second data based on the first calculation result;

a first likelihood converting part converting the first calculation result into a first likelihood of the first calculation result, said first likelihood corresponding to the first data;

a second decoding part generating a synthesized sample value for the first data by a synthesizing process based on the first likelihood, calculating the branch metric and the pass metric as a second calculation result based on the first likelihood, and decoding the second data based on the second calculation result; and

a second likelihood converting part converting the second calculation result into a second likelihood of the second calculation result, said second likelihood corresponding to the second data, wherein said first decoding part calculates the pass metric based on the second likelihood converted by said second likelihood converting part, and one of the first data decoded by the second decoding part and the second data decoded by the first decoding part is output as a regenerated data.

12. (Original) The apparatus as claimed in claim 11, wherein said recording part comprises an operation part conducting an exclusive-or operation for the first data at a data unit dividing the first data by a predetermined data,

wherein said recording part controls said operation part to conduct the exclusive-or operation for a previous operation result and a next data unit of the first data so as to convert the first data into the second data.

13. (Original) The apparatus as claimed in claim 11, wherein said first likelihood converting part comprises:

a converting part converting the first calculation result by said first decoding part into intermediate likelihood of the first calculation result for the second data; and

a first likelihood obtaining part obtaining the first likelihood corresponding to the first data based on the intermediate likelihood converted by said converting part and the predetermined operation.

14. (Original) The apparatus as claimed in claim 13, wherein said first likelihood converting part comprises an interleaving part changing a data order of the first likelihood to generate an interleaved likelihood wherein the interleaved likelihood generated by said interleaving part is defined as the first likelihood.

15. (Original) The apparatus as claimed in claim 11, wherein said second likelihood converting part comprises:

a converting part converting the second calculation result obtained by said second decoding part into intermediate likelihood of the second calculation result for the first data; and

a second likelihood obtaining part obtaining the second likelihood corresponding to the first data based on the intermediate likelihood converted by said converting part and the predetermined operation.

16. (Original) The apparatus as claimed in claim 15, wherein said second likelihood converting part comprises a de-interleaving part changing back a data order of the intermediate likelihood to generate a de-interleaved likelihood wherein the de-interleaved likelihood generated by said de-interleaving part is defined as the intermediate likelihood for the first data.

17. (Original) The apparatus as claimed in claim 11, wherein said second decoding part synthesizes the first likelihood based on signal characteristics of at least one case of that the data is recorded and that the data is regenerated, and generates a synthesized sample value for the first data.

18. (Original) An apparatus for recording and regenerating data, said apparatus comprising:

a plurality of equalizing parts equalizing a regenerative signal from data recorded on a recording medium by different types of partial responses;

a plurality of decoding parts corresponding to said plurality of equalizing parts, respectively, each decoding part generating likelihood of a sample value of a regenerative signal equalized by each of said plurality of equalizing parts, and decoding the sample value; and

a decoded data deciding part deciding decoded data based on any one of decoding results by said plurality of decoding parts,

wherein each of said plurality of decoding parts decodes the sample value by considering the likelihood generated by one of other decoding parts.

19. (Original) The apparatus as claimed in claim 18, wherein each of said plurality of decoding parts generates said likelihood based on a difference between an input

value corresponding to a sample value and an output value corresponding to the decoding result and iteratively decodes the sample value predetermined times based on the likelihood generated by another decoding part while the likelihood is updated every time the sample value is decoded.

20. (Original) The apparatus as claimed in claim 18, wherein said plurality of equalizing parts include at least two equalizing parts equalizing the regenerative signal by one partial response for low-frequency noise and another partial response for high-frequency noise, respectively.